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ADDRESS
TO THE
ROYAL GEOGRAPHICAL SOCIETY
OF LONDON;

Delivered at the Anniversary Meeting on the 24th May, 1841,

BY
GEORGE BELLAS GREENOUGH, F.R.S., &c.
PRESIDENT.

GENTLEMEN,

THE number, extent, and variety of the subjects upon which I have to address you, obliges me to be concise: without further preface, therefore, I propose to point out to you in the first place the shoot which geography has made during the past year, and the extent of those connected ramifications which may be denominated geographical literature; and afterwards to submit to you some considerations which I regard as important in relation to a few departments at least of geographical science.

In the *Athenæum* journal will be found a faithful, if not accredited, report of the papers read at the meetings of our Society, together with an abridgment or review of the most interesting works on geography immediately after their appearance.

Of the *Nouvelles Annales des Voyages* the third series has been brought to a close, and the fourth, being under nearly the same management, promises to be equally valuable. In this new series are enumerated the principal discoveries announced during the last twenty years.

The magazine, entitled '*Hertha*,' which ceased nominally after the death of Hoffmann, is carried on by his colleague, Berghaus, under a new title, *Annalen der Erd, Völker und Staaten-kunde*.

In connexion with the '*Annales des Voyages*,' we have in the

'Archives des Voyages' a collection of geographical letters, memoirs, itineraries, &c., of early times, many of them original or very scarce.

M. Navarrete at Madrid has recorded the several discoveries of Spanish navigators in the fifteenth and sixteenth centuries. In a series of Russian travels edited by M. Vlastov, at St. Petersburg, we find an account of a journey in the Holy Land as early as the twelfth century.

Of the travels of Ibn Bâtûtah, Professor Lee translated the abridgment for the Oriental Translation Society. The Royal Academy of Lisbon is now printing the entire work. Viscount Santarem is about to edit the Portuguese chronicle of Gomez Eanez de Azurara, with an introduction and many curious notes.

M. Ticozzi has comprised in sixteen volumes a geographical and political sketch of all countries.

Topographical dictionaries have multiplied beyond expectation in Italy, Germany, France, Switzerland, and elsewhere. The Dictionary of France by M. Girault, which gives the names of all the communes and more than 20,000 hamlets, is in two quarto volumes, with 180 engravings.

The discovery of a north-west passage, which has flattered and disappointed the hopes of so many generations, still remains incomplete. The sad fate of the intrepid and indefatigable Simpson, to whom one of the royal medals was awarded last year, and who seemed of all men living the most likely to solve the problem, is generally known, and the subject is much too painful to be unnecessarily dwelt upon. The report of M. Koschevarov, a Creole officer, who was sent out by the Russo-American Company upon a kindred enterprise, but arrived too late to deprive Messrs. Dease and Simpson of the glory of their discovery, is on the eve of publication, if not published.

The January Number of the *Nouvelles Annales* contains the particulars of an expedition appointed by the same company to examine a tract of country situated on the north-western coast of North America. M. Glazunov, the leader of the expedition, started in 1833, and in the space of 104 days went over 2080 versts (1387 English miles) of ground. A map of this hitherto unknown district is appended to the description.

M. Povkovski the astronomer, and M. Baer the naturalist, finding it impracticable to explore Novaia Zemlia, according to the instructions of the Petersburg Academy, confined their investigations to Finmark and the three divisions of Lapland. Professor Zetterstedt has described the natural history of Lapland generally, and Mr. Bôthwink its geological structure.

M. Berthelot has laid before the Geographical Society of France an ample account of the voyages of discovery undertaken in the Bombay,

the *Vénus*, the *Dunkerquoise* whaler, and the *Recherche*. The expeditions of Dumont d'Urville and Wilks having the same object, and crowned nearly at the same time with equal success, are so familiar to the public that I need here only allude to them. From the vast tracts of ice in the antarctic regions, Buache predicted that there must be in that part of the world high mountain-ranges and large rivers, with an inland sea wherein those masses were generated as in the Arctic.

The Commission of Northern Discovery, at the head of which is M. Gaimard, have published a History of Iceland and a description of its physical structure illustrated by numerous views for the most part basaltic, taken along its rugged and precipitous coast.

The description of M. Vaillant's voyages in the *Bonite* will occupy fourteen octavo volumes, of which two have appeared. It will be embellished by numerous engravings, and three atlases.

The appointment of M. de la Roche to accompany the *Erigone* in her voyage to the Pacific Ocean is considered by his countrymen a pledge that in this expedition the interests of science will not be disregarded.

Messrs. Swenstrup and Schytte have been despatched by the Danish government to investigate the natural and artificial productions of Iceland, and the *Bellona* frigate, which has sailed for Cape Horn, has on board in M. Krayser a well-known naturalist and geographer.

A new expedition will probably be fitted out by the Academy of St. Petersburg to further scientific researches in Siberia.

The governor of the Hudson's Bay Company (Sir George Simpson) has started for the Rocky Mountains. After visiting the several settlements north on the Columbia, he proposes to cross the sea of Okhotsk, and proceed by land to Kyakhtha and St. Petersburg.

In two volumes, recently published, Capt. Lafond de Lurcy has presented to us the first-fruits of his fifteen years' observations in all parts of the globe. I shall have occasion to refer to this work again in the course of my address.

At the Royal Library at Paris great exertions are making to obtain a collection of maps worthy of that noble establishment, and I am happy to observe indications of a similar spirit in the British Museum.

The Emperor of Russia has given orders that the most interesting reports received by the Mining department, which was re-organised in 1835, shall be published in French. The annual reports for 1836, 1837, and 1838, which came out at once, contain a detailed account of the institution, its regulations, the sites of the mining districts, and the organisation of their establishments : henceforth the reports will be published

annually, one year intervening between the appearance of the original and the translation.

A synopsis of the several towns in Russia, showing their comparative importance and statistical features, has issued from the cabinet of the Home Office at St. Petersburg.

Professor Possart, of Stuttgart, has brought out an interesting treatise on Scandinavia and Sclavonia.

M. Boué has written a valuable work on Turkey. He describes that country as composed of seven or eight systems of mountains, which run in different and even opposite directions, but never constitute what can properly be called a central chain. At the meeting of these systems are often vast hollows, sometimes occupied by lakes, a characteristic feature of western Turkey and continental Greece. The highest summits are in the neighbourhood of the lowest depressions. The abundance of flat-bottomed cavities on lofty eminences give the country a singular appearance. In the centre of Turkey may be observed, at the southern base of the crags which traverse it from west to east, a chain of these hollows which may once have been uninterrupted. The basins of Uskúp, Guspendil, Thrace, and others running on to Adrianople, are links of this chain. The form of the country renders it easy to make communications from N. to S. or from N.W. to S.E. in the western or central districts; while in the eastern it would be difficult to carry any from W. to E. or from N. to S. In the plain of Mœsia several natural roads are passable in a carriage. In some provinces, particularly Herzegovina, the lakes find subterranean outlets, and owing to the accidental obstruction of streams, and the shifting of their channels, lakes and torrents laid down upon a map sometimes disappear only a few years after its completion.

Similar to the structure of Turkey, as described by M. Boué, is that which Colonel Marmora assigns to Sardinia. Immense marshes, some of which have artificial communications with the sea, form one of the distinguishing features of this island; the plains are of great extent, and several of them extremely fertile. Mountains are numerous, but there is no mountain-chain in Sardinia.

By his recent monograph and the beautiful plates which accompany it, Professor Agassiz has familiarised to us the glaciers of Switzerland with all their attendant phenomena; and by recognizing over extensive areas in distant places and at high elevations the same phenomena, easily explicable by the agency of glaciers, but inexplicable by any other cause hitherto assigned to them, he has thrown a new and unexpected light on the past history of the earth and greatly extended the range of physical inquiry.

Mr. Murray's hand-books continue to be conducted with spirit. That which relates to Greece, Turkey, and Asia Minor will be necessary to the outfit of oriental travellers.

A volume of much more extensive utility has this day been laid upon your table by your Secretary (Colonel Jackson), entitled 'What to Observe.'

EUROPE.

Russia.—M. Moravyev, known for his travels in Egypt and Syria, has lately described those spots in Russia whose reputed sanctity renders them the resort of pilgrims and devotees. The journal entitled the 'Siberian Mercury' is discontinued: two volumes drawn up by the Royal Academy of St. Petersburg evince the undiminished desire of that learned body to extend our knowledge in respect to Russian geography.

Two works have been written on the Kossaks of the Volga, one by M. Nessedyev, the other by M. Popov, professor at Kazan. The scenery of that river has been described by M. Chernetsov. The fair of Novogorod has found an historian in M. Subov, and the province has been investigated by M. Helmersen, to whom we are further indebted for an account of the geological relations of Russia in general. M. Bergstrassen has given a report on the province of Olonetz, and Mr. Demilov has availed himself of the French press to make known his observations principally in the Crimea.

Prof. F. Parrot (son of the academician) lately died in his fiftieth year at Dorpat, in Livonia. He was distinguished as the author of *Travels to the North Cape, the Pyrenees, the chain of Caucasus, and the Crimea*. I am happy to add that very few geographers or travellers of celebrity have died during the past year.

Denmark—Sweden.—Captain Baggersen has written on Danish geography and statistics, and Colonel Forsell on Swedish.

Prussia—Poland.—The boundary of these countries was determined by treaty in 1815, but the industry of Professor Berghaus has now for the first time made it generally known.

Greece.—An elaborate account of Greece has been published by M. Fiedler, who, by desire of his government, passed three years in the several provinces in searching out the necessary data.

ASIA.

Turkish Asia.—Of the numerous works which have issued of late from the press at Paris, relating to the Levant, few only are geographical. Among these may be mentioned the tour of M. Baptistin Poujoulat through

Asia Minor, Mesopotamia, Palmyra, Syria, Palestine, and Egypt; two volumes only are yet published.

M. Prat, formerly of the French navy, and who afterwards held a commission in the army of Mohammed 'Alí, is drawing up an account of his observations; and we may expect from M. de Vergnes a description and map of Hijáz.

To the French translation of Mr. Bell's 'Circassia,' M. Vivienne has added an introductory memoir, with numerous notes.

The plain of Troy is a subject upon which so much has been written, and written in vain, that it would be a waste of time to attempt its further elucidation. In the paper which Dr. Forchhammer has presented to us the facts I believe may be depended upon; but I cannot subscribe to the justness of his conclusions. If the plain of Troy be now what it was in the days of Homer, the poet's description was not only incorrect, but prophetic; for in a district where mountain-torrents alone are producing continual changes of level, independently of those brought about by other causes, it is inconceivable that the aggregate amount of these changes, after the lapse of more than two thousand years, can be faithfully represented by 0. The deposit of alluvial matter by the side of the river took place, in the opinion of the author, long before Mount Ida rose from the sea. This is another gratuitous hypothesis, which, if it were capable of being substantiated, would only lead to new difficulties, for the cause must precede the effect. To identify the existing rivers of the Troad with the Homeric seems to me hopeless, but within the last year the attempt has been renewed, not only by Dr. Forchhammer, but also by M. Mauduit.

Of the journey of Messrs. Ainsworth and Rassám, conducted at the joint expense of the Society for promoting Christian Knowledge, and the Royal Geographical Society, a full account has been given in the *Journal* up to their arrival at Mósul on the 31st of January, 1840.

In the beginning of June last, the travellers left Mósul, and having crossed the mountains of Kurdistán, and visited 'Amádiyyah and Julámerik, ascended to the head waters of the greater Záb. From Urumiyah and Ushneñ they re-entered the mountains, ascended the Peak of Rowándiz 10,568 feet above the level of the sea, and went back to Mósul. Their account of this journey will appear in our *Journal* with a map and several geological sections.

Now that the expedition has closed its labours, I shall briefly state the result. Proceeding from Skútari the party has traversed Asia Minor in a south-easterly direction to the Persian frontier, a range of more than 16 degrees of longitude, and 5 degrees of latitude. Within these

general limits their route was most circuitous, winding along the courses of rivers, turning lakes, crossing valleys, and threading the defiles and passes of mountains; travelling in this way some thousands of miles, in many parts over a country hitherto but imperfectly known, and consequently incorrectly laid down on our maps. They have determined the latitude of 64 places, and the longitude of about a dozen. Nearly 150 heights have been ascertained, and the approximate population of about 90 towns or villages. Numerous positions have been determined by compass bearings; the hydrography of the country has been materially corrected, particularly in Paphlagonia, and near *Ḳaïsáriyah*; the errors respecting the eastern tributaries of the greater *Záb* have also been rectified. The obscure districts of *Berni* and *Adeyaman* have been explored, and the important Pass of *Erkeneh*: many facts have been pointed out interesting to the geologist, such as the modification of the limestone by contact with igneous rocks, and the difference between the sedimentary beds in *Bithynia* and *Paphlagonia*, the former appearing to have been deposited in a deep sea, and the latter to have had a littoral origin. Continuous oyster-beds have been observed at an elevation of 3000 feet above the level of the sea in the neighbourhood of *Za'farán-lí*, where the rocks abound in fossils, some beds being wholly composed of nummulites. The copper mines of *Baḳır Kúreh-sí*, esteemed so valuable in the time of Mohammed II., the salt mines between *Bayád* and *Ḳanḳari* and those at *Túz Kóí* on the *Kizil Irmák*, the copper mines of *U'rah Tágh*, the galena mines of *Denek Ma'den*, producing weekly 35,000 lbs. of lead and 10 lbs. of silver, and the meerschaum pits of *Serví Hışár* have been severally examined. The form and dimensions of the great salt lake of *Túz* Chólí*, 2500 feet above the sea, have been ascertained. The hills round *Angora* have been carefully examined, and the rocky and cavernous region of *Garsaurites*, inhabited by troglodytes. The extraordinary fact has been noticed that the plain of *Ḳará Hışár*, though elevated 3420 feet above the sea, does not send out a single stream. The iron mines, lead mines, and sulphur pits of the *Hakkárí* have been examined. Some light has been thrown upon the ancient geography of *Asia Minor*, and much information gleaned respecting the productions of the country, and the manners and state of its present inhabitants. Thus, though the objects of the expedition have not been carried out to the extent anticipated, a great deal has been effected along the line of route.

Mr. Southgate, a missionary, has visited the Lake of *Ván* and the city of *Bitlis*. He describes *Bitlis* as situated at the junction of three

* *Túz*, in the Turkish language, means salt.

deep mountain valleys, and extending some way up into each of them. Three little streams water these valleys, and uniting flow into the Tigris. On leaving Bitlís Mr. Southgate proceeded for an hour and a half along the road to Músh; two hours more brought him to the Lake of Ván, bounded on the right by high rocks, and on the left by a gentle slope broken into hills, and extending to the snowy peak of Seibán. On his return he visited Baghdád.

In M. Norov's recent Travels through the Holy Land, the Slavonian manuscripts which he there collected are incorporated.

Mr. Fellows in his second journey proceeded from Smyrna southwards to the vale of the Caystrus; leaving Mount Tmolus on the East, he crossed the range of Messogis, and passed up the vale of the Meander to the foot of Mount Cadmus; the assigned latitude of Aphrodisias he ascertained to be correct, not so the longitude. Returning to the Meander, he crossed its tributaries, the Harpasus and Marsyas, following the latter almost to its source in the ridge, which, as laid down by Colonel Leake, stretches in a N.E. direction from Moghlah to Mount Cadmus. From Mylasa he journeyed southwards along the Peræa or coast of Caria, which is eminently picturesque, till he reached Lycia, the main object of his journey. Mount Massicytus is the most remarkable feature in Lycia; it separates the hills and dales from the high table-land formerly occupied by the people of Milyas and Cibyratis. Covered with perpetual snow, its summit, as estimated by Mr. Fellows, is not less than 10,000 feet above the level of the sea. Numerous springs burst out along its sides and fall abruptly into the Xanthus, the course of which attains the length of 200 miles. A second line of springs occurs in that part of the range in which the principal town is Kaşabah, and form a river which, making its way by a gorge of 25 miles through a range of mountains 4000 feet in height, reaches the Mediterranean at Myra. A third river, rising near the ancient city of Arycanda, assumes its name. Other deep and never-failing streams near Limyra in the plains of Phineka derive their supply from a considerable river which precipitates itself into a cavern, some 30 miles to the north, in the high country of Milyas close to Almah-lú, a modern town containing 25,000 inhabitants mostly Armenian, which, if visited, has never been described by any European. Plains of corn-land well cultivated extend for 25 miles from the town in one direction, and there is a lake above 10 miles in length. Another plain almost equally extensive stretches to the south-east: these plains or table-lands attain the height of at least 4000 feet above the level of the sea.

The northern frontier of Lycia is a prolongation of Taurus. Mr.

Fellows crossed this chain to that part of Phrygia which lies S. and S.E. of Mount Cadmus, where he found an extensive lake, which having skirted for nearly 20 miles, he discovered beyond it, on the north, a plain extending 100 miles to the base of Mount Cadmus. From bearings, Mr. Fellows places this mountain 50 miles eastward of the spot usually assigned to it; a position not at variance with observations made previously at its base: the district he passed through is well cultivated and bordered by villages.

The ancient Calbis, a considerable river, which, after a course of 200 miles, reaches the sea at Kóijiz nearly opposite to Rhodes, rises in Taurus, N.W. of Aṭáliyeh, and it flows on the north of that ridge. In many maps, even the best, it is made to rise on the N.E. near Mount Cadmus; but there are few streams in that district, owing to the porous nature of the soil. The rivers whose sources are on the N. of Mount Cadmus find their way to the Lycus and Meander.

Mr. Fellows found the chart of Capt. Beaufort most valuable, and as the mountainous character of the country enabled him to command at one view the western, southern, and eastern coasts, a careful notice of the bearings provided him with the means of constructing a tolerably correct map. In this manner he determined the sites of several cities, and by examination of the coins and inscriptions discovered, some of them bilingual, ascertained the accuracy of the names awarded to those cities; names which not only tallied with the description of them as given by classical historians, but which received further confirmation from the list of frontier towns given by Strabo, Ptolemy, and other ancient geographers. The map thus constructed differs materially from those which have been formed by scholars solely upon classical authorities, more especially in the spaces occupied by different nations, which, naturally enough, have been imagined greater than they are in reality.

The forthcoming volume of Mr. Fellows's work is to contain a small general map showing his entire route, and a larger one of Lycia only. In the earlier part of his journey he went over nearly the same ground as Chandler and Hamilton; but of the interior of Lycia we knew absolutely nothing: he has therefore contributed in no slight degree to the advancement of geography ancient and modern. He has faced the dangers and diminished the apprehensions which have hitherto opposed the exploration of this highly interesting country; he has opened the way to future researches into its botanical and geological characters: his collection of coins may probably throw light upon its ancient history, and the bilingual inscriptions upon rocks which he has discovered (the work of the ancient inhabitants) will it is hoped

lead to the recovery of a language supposed to have been for ever lost.

Mr. Fellows considers M. Texier's map of Lycia to be in its best parts only a compilation, and with regard to the physical features of the country strikingly incorrect.

In a learned pamphlet, published at Berlin, M. Franz has described five towns and deciphered five inscriptions in Asia Minor; it is accompanied by an elaborate map of Phrygia, and a sketch of that country after Ptolemy by H. Kiepert.

M. Davidov, who has been travelling in Greece and Asia Minor with a train of artists, has recently brought out at St. Petersburg an octavo volume with beautiful plates illustrative of those regions.

An official report on the Caucasian provinces made in 1837 has been largely corrected by M. Chopin.

M. Letellier, formerly vice-consul at Tiflis, to whom we are obliged for a polyglot vocabulary of Caucasian languages, has lately published a *Seven Years' Tour in Georgia, Persia, and Russia*.

Mr. Cruttenden, who travelled from Mokhá to Şan'á in search of inscriptions, observes that the river Zebíd, marked upon his small map, ceases to flow during the dry season: at Beit-el-Fakîh he experienced a more intense degree of heat than in any other part of Tehámah: the wind which passes across a sandy plain separating Beit-el-Fakîh from Hodeidah, he says, is actually suffocating. He describes the Valley of Senníf, seen after a six days' journey across deserts, as strikingly beautiful, luxuriant in vegetation, well timbered, and watered; its shape is that of a horse-shoe. Beyond Senníf the country becomes bold and magnificent, and the difficulty of threading the mountain defiles is too great to admit of travelling by night: after leading their horses up a very steep ravine the travellers entered a vast plain by the valley of Wádí Şeihán, and beheld to the north the mountains of Jebel Harráz, to the south those of Jebel Burra': the former inhabited by the Khórah tribe who lie in wait for travellers and, unlike most of the Arab banditti, murder their captives. The mountains rise 1500 feet above the plain: a light loam, conveyed from the mountains by rains and torrents, is peculiarly favourable to the growth of coffee, which is much cultivated: after passing the village of Şeihán, situated in an extensive plain, that of Mofhak on a nearly inaccessible ravine, and that of Motteneh at the extremity of a long rocky plateau, the travellers arrived at the Valley of Şan'á, which is finely wooded, but extremely hot: the town is considerable. Shortly after leaving this place Mr. Hulton, the companion of Mr. Cruttenden, died of fatigue.

Persia.—Captain Blosse Lynch, whose Survey of the Tigris between

Ctesiphon and Mōsul is published in our 'Journal,' has made known a new line of communication with India stretching from Šámsún through the valleys of Taurus, along the ancient road from Pontus into Mesopotamia. He passed the northern springs of the Tigris, close beneath the 'Aḳár Bahá mountains, and at Diyár-Bekr embarked on a raft of inflated skins, and floated with the stream, which is navigable in no other manner, for more than a hundred miles. A sudden change takes place in the character of the country, from the point where the Baṭmán Šú joins the Tigris. The river deepens, and the open undulating unwooded banks are succeeded by steep cliffs, or rich sloping plains. Captain Lynch considers the junction of the Khábúr with the Tigris to be the place where the Greeks effected a passage over the Carduchian mountains, but sought in vain for the ford above Mōsul where Alexander crossed before the battle of Arbil. Arbil stands in a plain broken by ravines or watercourses, the banks of which must have been levelled to admit the passage of the chariots of Darius.

Mesopotamia.—Captain Lynch and the officers with him have examined with attention the river district between Baghdád and the Khábúr, which joins the Tigris a little below the "overhanging cliffs" of Zenophon; they have accurately determined the line of the principal Canals of Babylonia, by which the Tigris communicated with the Euphrates, and laid down trigonometrically, as far as more pressing duties would allow, the intermediate country. Their survey will give a chain of well-fixed points for more extended operations into the mountain tract on the east of the Tigris, and will be of great use in drawing up future itineraries.

Kashmír.—Few spots, perhaps, in the gorgeous East have stronger hold on our imagination than Kashmír. Among recent visitors of this celebrated valley Baron Carl von Hügel stands conspicuous: his merits as a systematic and scientific traveller are of the highest order. Of his splendid work an abstract appears in the last number of our Journal, and we hope ere long to find in our library not merely the original, but an English translation of it. It affords me much pleasure to hear that the noble author has received from his sovereign, the king of Würtemberg, a diplomatic appointment in this country.

Mr. Vigne, who claims, I believe justly, the merit of being the first European traveller who penetrated to Iskárdó, resided longer than Baron von Hügel in Kashmír, and traversed it at three different periods and in various directions. His observations will soon be communicated to the public. His map of Kashmír and the passes from thence to Thibet and the Alpine Pinjáb, laid down on a scale of two miles to the inch, principally from a base of three miles, measured

along a plain in the centre of the valley, by Lieutenant Mackison and Dr. Falconer, has been presented to the Honourable East India Company, and will appear under their auspices.

India.—The account of Kunáwar, which Captain Alexander Gerrard considered his best work, is now publishing under the superintendence of Mr. Lloyd. It contains an able exposition of Captain Gerrard's researches in the Himálaya together with those of his brothers.

Kábul, Ghazneïn, the Bólán Pass, and other places more especially interesting at this period, have been illustrated by Sir Keith Jackson : and Lieutenant Irwin has thrown new light on the climate, soil, and productions of Afghánistán.

Among the numerous papers printed by order of the House of Commons a Memoir on Afghánistán and Persia is to us especially interesting : the introduction enumerates and describes the various territories confirmed or ceded to the Maharájá of Láhór by Sháh Shujá'u-l Mulk : we find also a detailed account of the principal routes through these countries, with notices descriptive of the most remarkable towns and passes : among these are Ghazneïn, Herát, Kelát, and Kandahár. The Bólán Pass is minutely described, though no description, it is said, can convey to the reader an adequate idea of its impregnable strength : the Appendix contains notes on the passages of the Indus, and on the trade, produce, and climate of Kábul. These documents have been compiled partly from published accounts ancient and modern, partly from private papers in the archives of the India House. These archives have been of considerable service also to Mr. Montgomery Martin in compiling his 'Buchanan Papers,' illustrating the history, antiquities, topography, and statistics of eastern Asia : they occupy three octavo volumes, and comprise official surveys of Behár, Sháhábád, Bhágalpúr or Górák'h-púr, Dínáj-púr, Púraniya, Rang-púr, and Assám. Major Jervis, I am happy to find, has undertaken to compose a popular and philosophical digest of the geography and statistics of Asia, and more especially of our Indian possessions.

Hydrography of Asia.—Mr. Wise, late chief officer of the Hon. Company's ship Edinburgh, has analysed a hundred voyages to and from India, China, &c.

Mr. Windsor Earl has translated from the Dutch an account by Lieutenant Kolf of voyages performed in 1825 and 1826 by a brig-of-war, the Dourga, through the southern parts of the archipelago of Molucca (imperfectly known), and along the southern coast of New Guinea, till then unexplored.

Siberia.—M. Federov, after expending six years on astronomical and geological investigations in the south-west of Siberia, has returned

to St. Petersburg. M. Karelin at the expense of the Natural History Society of Moscow has been travelling in the south of Siberia; and Mr. Schrenk is gone to botanise along the frontier of Russia and China.

China.—It is natural to expect that our closer intercourse with China will enable us to obtain a clearer insight into the geography of that mysterious country: one important piece of information has been already acquired: I refer to the great Yang-tse river (Kyang), which, rising in the mountains of Thibet south of Lake Khokho Noör, and gathering volume from numerous tributaries, traverses the richest provinces of the celestial empire: its banks are adorned by numerous wealthy cities, more especially Nan-king, the ancient metropolis of China.

The English squadron, on its late visit to the gulf of Pe-che-li, had occasion to notice how anxiously this quarter was watched by the government and how large a force was concentrated at the junction of the Yang-tse Kyang and the Grand Canal (the great alimentary canal as Mr. Davis very properly designates it) by which the produce of the southern and midland provinces is transported to Pe-king, and the comparatively barren regions of the north. This circumstance it is which renders Chusan an important station, being the spot from which foreign merchandise may be most easily imported or a hostile force most effectively discharged into the bowels of the empire. It is said that the Tartar rulers, in their desire to guard against such consequences, have from their first accession adopted the most effectual method of keeping this channel of communication secret, that of keeping it useless: they have denied ingress and egress to their own coasting vessels which would naturally have gone up this river, and obliged those natives who trade with foreign countries to land their cargoes at Shang haï, in the Wú-sung river, the mouth of which is opposite Tsung-ming, and re-embark them on the Grand Canal; so that they can reach the Yang-tse only by a circuitous route and at a considerable distance from the coast.

Thanks to the exertions of Captain Bethune, the mystery in which the navigation of this important river has hitherto been involved, is now removed. In the centre of the frith the island of Tsung-ming divides the stream into two branches: the northern branch is impracticable, but the Conway and Algerine cruisers, under the orders of Captain Bethune, found even upon the bar near the entrance of the Wú-sung river twenty-one feet of water, and having passed this obstacle a channel varying from three to four, five, and six fathoms in depth, and from one to three miles in width, so that a line of battle ship may easily effect an entrance. Captain Bethune carried his survey sixty miles to the west of the mouth of the Wú-sung river, and at his turning point left it seven miles wide: above this its soundings are

unknown ; but the river at its junction with the Grand Canal is described as three miles wide, and large junks are known to ply at Nan-king.

The Canton Repository, a monthly periodical, abounds in information upon all matters connected with China.

I hear that the Japanese, whose antipathy to European connection is still stronger than that which is felt in the celestial empire, are publishing a Japano-Chinese dictionary on the same plan as Morison's. Such a work will be useful, especially as the Japanese is an alphabetical language.

AFRICA.

Mr. Wiltshire has verbally communicated to us the remarks he made on a recent journey through Morocco : to Terramona, described by Davison as a Gibraltar in miniature, he assigns an elevation of 3500 feet. A salt lake in the province of Hammah yields, he says, a rental of 4000 ducats per annum. The relations of Morocco to France form the subject of an interesting article in the '*Nouvelles Annales des Voyages*.'

In the same periodical is given a tabular view of the French possessions in Algeria ; and we are indebted to M. Van der Maelen for a new physical and political map of that country.

Baron Baude, counsellor of state, has published two volumes on Algeria, illustrated by plates. The sketch of the history, geography, and natural productions of Algiers, by Dr. M. Wagner, who accompanied the French expedition against Belidah, and availed himself of the treaty of Tafnah to visit the greater part of 'Abd-el-Kâdir's country, is said to be the most comprehensive work on the subject since the time of Shaw.

M. Ternaux Compans is bringing out translations of several very rare tracts on Algiers, Oran, &c., by Spanish and Portuguese travellers.

The description of Guinea by André Alvarez d'Almada, written in 1594, but of which an extract only has hitherto been published, is now printing entire at Oporto.

M. Gustave d'Eichthal, in a paper presented to the Geographical Society of Paris, has investigated the origin of the Fúlaks or Fellâṭaks, a swarthy race, inhabiting Nigritia. He considers it certain that they are not aborigines, but colonists ; their language, he maintains, belongs to the Malay family, and is closely allied to the Javanese.

M. Jomard has drawn up an account of the Gallas of Limmú, and has constructed a map of the route from Limmú to the confluence of the Blue and White Nile. He describes the physical features ; traces the principal routes ; examines the construction of the language, of which he gives a vocabulary ; and concludes his paper by remarks on the climate

and natural productions of the country, and the character of its inhabitants.

The account of Africa recently published by Mr. M'Queen is a work of great industry and research. He says that his map was constructed by arranging, on a large scale, the various places, bearings, distances, and journeys of African geographers and travellers, both ancient and modern; then combining them and correcting them by each other, or by a few established positions, and afterwards reducing the whole. He differs from Captain Allen in his account of the supposed course of the river Yeú, and agrees in this respect with Lander, Clapperton, and Denham. He also disputes Lander's statement that the Adoo flows into the Niger.

Mr. W. Desborough Cooley, in his well-timed 'Essay on the Negroland of the Arabs,' endeavours to found the early history and geography of Central Africa on a solid basis—the evidence of those Arabian travellers and writers, as Ibn Bâtútah and Ibn Khaldún, who, under the stimulus of commercial profit or religious proselytism, made their way during the middle ages through the northern deserts to Negroland. Impressed with a strong conviction that systematic geography, when not founded upon science, tends to erroneous conclusions, he patiently deduces his inferences from internal evidence, according to the strict rules of logic.

Ibn Sa'id, who wrote in the thirteenth century, has enumerated, he says, thirteen nations of blacks, who extended across Africa, from Ghánah on the W. to the Bojá on the shores of the Red Sea; yet it is not till we arrive at the tenth of these, or Kánem, that we are able to identify satisfactorily the nomenclature of Ibn Sa'id with that of the moderns. The first nine nations towards the W. remain undetermined.

Mr. Cooley proves that the site of Aúkár, the ancient capital of Ghánah, must have been very near the present site of Tombuktú, if, indeed, they were not identical. Having established this, he proceeds with a train of very ingenious arguments, by which the approximate sites of many others of the principal towns and routes of ancient Ghánah are clearly indicated. Great probability is given to his theory by the exact coincidence of the position of the desert in his conjectured route to Tombuktú with the recorded position of the desert in the ancient route to Aúkár. He compares the writings of El Bekrí with those of El Idrísí, and gives a decided preference to the former. He describes the journey of Ibn Bâtútah, and from this record proves the position of the capital, and many of the towns of Máll, and establishes its northern and eastern boundaries. He disposes very summarily of the hypothesis which identified Kánó with Ghánah, by pointing out that the former contains not a single stream considerable

enough to retain its waters during the hot season, and therefore not one with which it is possible to identify the great navigable river mentioned in all the accounts of Ghánah. He states that the appellation Tekrúr, though widely and vaguely extended in the course of time, was originally restricted to a spot between Sillá and Sanghanah, the territorial name of which he conjectures to have been Zágah. This account is somewhat different from that of Mr. M'Queen, who pronounces that the name Tekrúr, the proper spelling of which he states to be Takrou, included the central portion of Súdán, from Dárfúr to the mouth of the Gambia. Mr. Cooley then proceeds to point out the distinctions between Kúghah, Kághó, Kaukau, and Karkar, the two first of which he believes to be different designations for the same place, while the others, so often improperly applied, refer to separate territories. His last arguments, exclusive of the division of Negroland into nations, are directed to prove the identity of the ancient race of the Demdem with the modern Yem-yem, or N'yem-nyem. The position of the former among the hills of Kabi nearly coincides with that of the latter in the mountainous country S. of Kanó: both are wild, savage, and reputed cannibals; and, finally, if they are not identical, the race of the Demdem must be totally extinct, as no other traces of them are discoverable. By proving that the course of the Great River, as given by El Bekrí, is correct, and that of El Idrísí erroneous, our author convicts the latter of a mistake, when, speaking of Lemlem and Demdem, he represents as two distinct countries what are in fact variations of the same name. The postscript is devoted to establishing the route from the capital of Ashanti, through Gonjah, to the Kowará; and many difficulties in the works of native writers are accounted for by their habitual substitution of *d* for *r* in the names of places.

The 'Ethiope,' a Liverpool steamer, after attempting in vain to go up the Benin and Wari branches of the Kwara, eventually made its way to Láyaba (Lever of Lander), situate on its western bank 50 miles above Rabbah: beyond this the navigation is obstructed by rocks. The disposition both of the king of Rabbah and the people is said to have been friendly.

I congratulate you on the countenance and support which the Niger expedition has received from the first authorities of the realm: three steamers, admirably equipped, have been furnished by the Lords of the Admiralty, and 60,000*l.* appropriated by Parliament, in furtherance of that expedition. That the benevolent, patriotic, scientific objects contemplated by its promoters may be realised to the fullest extent, must be the wish of all who hear me; at all events, we have the satisfaction of feeling that the investigations which have taken place into the causes

of the unhealthiness of an African climate, and the remedies which have been suggested and are now under trial, will, in all probability, not only diminish the hardships and perils of the brave men who are engaged on this single enterprise, but will tend to secure the health and to prolong the lives of the inhabitants of either hemisphere, and of generations yet unborn.

Abyssinia.—Of Abyssinia we seem in a fair way of soon collecting considerable information; English and French travellers are now exploring it in various directions.

M. Lefevre, M. Petit, and M. Dillon have given routes of their travels in Tegrí in the year 1839, accompanied by a native itinerary from Derita to Naxda. M. Lefevre, who was subsequently employed by the Egyptian government in searching for metallic lodes in Sennár, died there at the commencement of last year.

According to the 'Bulletin,' M. Dufey is the first European who has visited the country of Showá, which he did in 1837, 8, and 9. He was accompanied in 1837 by M. L. Aubert. They arrived on the 9th of June at Maşawwah; and, a few days after, passing the Taranta, they entered Abyssinia. M. Dufey travelled subsequently from Gondar to Ankóbar, and from Ankóbar to Zeila', traversing thus a great part of Abyssinia. On the 19th of November he arrived at Tajúrah; and, sailing from the little port of Reitah, he arrived at Mokhá on the 8th of October, 1838. From Ankóbar to Zeila', M. Dufey was 43 days. He died at Yembo'. The result of this commercial journey, which ended so fatally for M. Dufey, is six voluminous memoirs, or series of notes, on Abyssinia and Showá, the country of the 'Adels, the Red Sea, and Arabia; and a route map: geography, ethnography, commerce, medicine—nothing seems to have been neglected: and if commercial relations, equally advantageous to all parties, are the best means of advancing the civilisation of Africa, the way seems to have been prepared by M. Dufey and M. Aubert, as far as Abyssinia is concerned.—(See 'Bulletin,' Mai, 1840.)

M. Rochet d'Hericourt is said to have penetrated 540 miles into the interior of Abyssinia; he landed on the south coast, and made his way through the kingdom of Adel, subject to Showá, where he was received with the utmost kindness and hospitality; his excursions were made in the presence of royalty, and under an escort of from 1500 to 2000 cavaliers. M. Rochet's favourite pursuits are chemistry and geology, but he does not neglect the interests of commerce.

In a letter from M. d'Abbadie, published in the *Athenæum*, that gentleman states that his brother had visited the sources of the Abháí, or Bruce's Nile, crossed the river in several places, made frequent

excursions into the Gállá country, and proceeded to within 3 days' journey of Enarea, which, according to the information which he received, was situated in a comparatively low country. M. Arnauld d'Abbadie had obtained a letter in two languages, one of which, the Ilmorma, has an alphabet wholly unknown: he also discovered a MS. in two volumes quarto, on vellum, in Amharic, composed by the favourite companion of Mohammed Grañ, the Tamerlane of Abyssinia, whose exploits are only known by extracts from Ludolf and Bruce. This MS. abounds in descriptions and names of places from Harar Geï to Sennár, and would be a most valuable mine for a Rennell or a Ritter. M. d'Abbadie himself was to go to Showá, and his brother was to visit the western frontier of Dejezmach Goshó, and to join him at Ankóbar, whence they intended to make bold excursions due north and south, and to examine on the one hand the country of Doba and Agoko, and on the other the Gállá kingdoms which spread along the table-lands of Central Africa. M. d'Abbadie states that the road to Abyssinia crosses the Kólla, or low flat country, in a direct line as far as Katra, then winds as it ascends through the long and narrow valley of Hadas, which ends at the Taranta rivulet. Deksa, three days from the sea-coast, is, like all other border villages, a spot chosen for defence rather than convenience.

M. d'Abbadie, while proceeding from 'Adwá to Góndar, was stopped by the chief U'bí, and compelled to return towards the coast. At Dugsa he parted with his brother, and proceeded to the convent of Beezén to connect its isolated mount with Maşawwa' on the coast, but an accident having deprived him of one of his eyes, he returned to 'Aden. He asserts that Dr. Rüppell is correct in making the water of 'Adwá flow south into the Takazzeï, instead of north (as asserted by former travellers) into the Mareb. The fact is not yet clearly established.

M. d'Abbadie visited the road passing through Káyakór (September, 1840), and connecting by a gentle descent the table-land of Tegreï with the Kólla near Maşawwa'. This is the road followed by Christopher de Gama, and recently but imperfectly described by Von Katt. It was during this expedition that the loss of an eye stopped him in the measurements he was making by carrying triangles from Mount Iswahet in Samén to Mount Iserká Kò near Deksa.

In the '*Annales des Voyages*' and the '*Athenæum*' copious abstracts are given of the travels in Abyssinia of Dr. Rüppell, whose name is so familiar to you, and to whom you so justly awarded a medal. I would earnestly recommend the members of this Society to study Dr. Rüppell's work in the original.

Dr. Rüppell describes the province of Samén in Abyssinia, which measures about 50 miles from north to south, and about 40 from east to

west, as an irregular mass of volcanic rocks, the highest crags of which nearly reach the line of perpetual congelation. The waters of this region are almost all collected in the river Bellegas, first discovered by him. It forms a boundary to Samén on the west and south, and descends into the Takazzeï. Enchetcab, the principal village of Samén, stands at an elevation of 10,000 feet above the sea, on an undulating plain devoid of trees, which however grow luxuriantly in the valley of the Bellegas, 4000 feet lower down. From Samén our author proceeded through the Mohammedan village of Dóbark to Góndar, the capital of Abyssinia. He next resolved to visit the Kólla, a low, sultry, pestilential ^{reg(ion)} covered with dense forests, at the northern base of the Samén range. A few hills, rising above the level of the noxious vapours which render the rest of the Kólla so deadly to man, are enlivened with villages, but every other part is uninhabited. Wild animals abound, and the soil is most prolific. After a residence of some weeks in the Kólla, Dr. Rüppell made an excursion southwards to the cataract of the Nile after it issues from the lake. He proceeded along the eastern coast of the lake, and passed through a handsome town named Kiratza, which has not been mentioned by any previous writer. His description of the cataracts of the Abay exactly coincides with that given by the Jesuit Godinho, but differs in some particulars from those of Bruce and Jerome Lobo. After his return to Góndar he took a road leading by the formidable pass of Sankaber on the northern side of Samén. Passing along a level, scarcely 40 feet in width, with a precipice nearly 3000 feet deep to the north, and a tributary of the Bellegas to the south, he came to a rude kind of entrenchment to which properly belongs the name of the Sankaber, beneath which the river Serima bursts forth and rushes down the abyss in a succession of cascades. Another day's journey brought him to a precipice 4000 feet deep, and commanding a view of the mountainous region of Tegrēi. Hence he proceeded southwards along a bare and desolate valley which conducted him to the camp of U'bí, the ruler of Samén. He went, in company with this chief, to Sowana, a place on the northern slope of Bwahat, and, having received from him a safe-conduct, hastened to visit the capital of the ancient Greek kingdom of Aḵsúm. Dr. Rüppell differs from all preceding authorities in his account of the rivers of Aḵsúm and 'Adwá, which he describes as flowing southwards into the Takazzeï, instead of northwards into the Mareb.

Dr. Rüppell pronounces that there is now every facility afforded to the traveller for entering and residing in Abyssinia, the fanatical hatred which the natives formerly nourished towards the Europeans being completely extinct. While at Masawwa', he made an excursion to the ruins

of ancient Adúlís, still called Adúli by the natives, and never before visited by an European. He ascertained its latitude to be $15^{\circ} 15' 44''$ N., and its distance from Afé only a quarter of a league.

In a letter from Dr. Beke, dated Nov. 22nd, 1840, we are told that the political agent at 'Aden, to whom we are already indebted for his admirable survey of the coast of Arabia published in our 'Transactions,' has entered into alliance with the Somáli and Dankalí tribes, and purchased two islands at the entrance of Tajúrah Bay, as also a small one at the upper end immediately at the entrance to the inner bay. He has also directed a survey of the coast of Abyssinia from Bá-b-el-mandeb to Berberah, and the East India Company's brig Euphrates is at present employed thereon, having completed as far southward as Zeïla'.

The French have purchased settlements within the Red Sea at Eid and Anfilah, at about 150 and 200 miles' distance respectively from the entrance of the strait of Bá-b-el-mandeb on the Abyssinian shore.

This information is interesting, as these acquisitions, it may fairly be hoped, will greatly facilitate geographical research in these parts.

Another letter, from Dr. Beke to Sir T. D. Acland, dated Tajúrah, Dec. 14th, 1840, and having for its object the establishment of the routes from Tajúrah to Ausá, thence to the Wollu Gállá, and from Zeïla' to Berberah and Harar, has been read to this Society.

These routes confirm the opinion of Dr. Beke, as expressed when in England, with the exception of the course of the river Hawásh, the termination of which holds a position entirely different from that which was before assigned to it. They were derived from the information of natives of Tajúrah, from which place Dr. Beke intended to start for Ankóbar. The journey from Tajúrah to Ausá occupies 15 days, that from Zeïla' to Harar may be completed in 12 by travelling day and night.

A messenger on foot can perform three caravan stages in one day; the stations which mark the close of the caravan stages are distant about a day's journey from one another.

AMERICA.

Newfoundland.—Mr. Jukes has made a physical and geological examination of a large portion of the coast by desire of the local government. Newfoundland has never been correctly triangulated, and much of the interior has never yet perhaps been trod by human foot; it is traversed by a range of primitive mountains, which take the same direction as the Alleghannies, and consist principally of granite and mica slate. Inconsiderable beds of coal are incumbent upon these, but their relation to the English is unknown, inasmuch as they are not capped by any

secondary rock nor accompanied by any fossil remains, at least sufficiently marked to be determined and classed: a third part of the island is said to be under water; the lakes are numerous, and many of them extensive; the roads are few in number and very limited in length, so that internal communications are extremely difficult. The old settlers are mostly from Devon and Dorset; of the more recent a large proportion are Irish. Our best maps ill represent the physical features. The general aspect of the island is barren and rugged; the surface consisting of a series of hills and valleys, varying in steepness, the one never rising into mountains, the other rarely expanding into plains. Masses of loose rock are scattered all over the country. There are a number of inconsiderable brooks, but no navigable river. The hills and valleys are frequently clothed with wood, among which may be found at intervals open tracts covered with soft and spongy moss, and called marshes, the slow drainage of which supplies the lakes during the dry season.

Mr. Bramston has laid before us a series of experiments and observations on the frozen soil at Martin's Falls in Albany River, about 300 feet above the sea level. It seems that a portion of the soil is at a slight depth permanently frozen, but in sunny situations the thaw in summer is complete. The line of perpetual frost commences on the coast between Equan River and Cape Henrietta, and takes a north-westerly course to the Rocky Mountains.

N.W. Coast.—An historico-political memoir on the north-west coast of North America, drawn up by Mr. Greenhow, and published by the government of the United States, contains an interesting account of the several tribes and nations by whom the disputed tract of country has been inhabited or visited from the time of its discovery. The author describes the western coast as bounded by a continuous chain of mountains, and the interior of the continent to a great distance as traversed by lofty ridges with small intervening valleys or plains. The Rocky Mountains, the chief of these chains, divide the territories drained by the Atlantic from those whose waters flow into the Pacific, and lie throughout their course, which is from N.N.W. to S.S.E., nearer the western than the eastern coast: the Chippewyan mountains are part of the same chain. Three ridges, one of which is known by the name of the Snowy Mountains, join the principal chain near the 42° of latitude, and near their junction is a very remarkable depression called the Southern Pass. Mr. Greenhow assigns to Oregon, comprehending the territory drained by the Columbia River, a similar character, and divides it into three regions separated by three mountain ridges: the Blue Mountains which constitute the central chain are crossed by both branches of the Columbia; they are chiefly volcanic: the third region

or high country of Oregon, westward of the Blue Mountains, is dry and sterile: the southern part, a desert of steep rocky hills and narrow sandy valleys, contains many lakes, principally saline; and gives rise to all the great branches of the Columbia. The author, after tracing the course of that river, states that from each of the two points between which it flows into the Pacific, a sand-bar runs out, over which the meeting of the waves with the river torrents produces a terrific line of breakers.

The attempt of Capt. Mudge and Mr. Featherstonhaugh to define by surveys and operations the uncertain territorial limits of Great Britain and the United States of America, has thrown new light on the physical geography of the tract in question: Mr. Gallatin has written a memoir upon the same subject accompanied by eight maps.

United States.—The Consul-General of Sweden, M. Arfredson, has written *Travels in the United States*. An account of the expedition of Dominique de Gourgues to Florida is about to be published in the collection of early Voyages of M. Ternaux Compans. Dr. Morton's *Crania Americana* is a welcome offering to the lovers of comparative physiology.

Mexico.—M. de Kazawinski is gone back to Mexico, commissioned by the Russian government to collect objects of natural history. Messrs. Linden and Funck are prosecuting zoological and botanical investigations in the same country on behalf of the Belgian government. M. Galeotti, attached to the house of Van der Maelen, and Member of the National Institute of Geography in Mexico, set out in 1835 to explore that country, and returned to Brussels last year with an immense store of information on physical geography and topography, statistics, the races, manners, and languages of the Indians, the nature and amount of population, and the distribution of the inhabitants according to climatic zones, which, in Mexico and intertropical America, may be thus classed—1st. torrid, where the mean temperature ranges from 20 to 25 cent. 2nd. temperate, ranging from 16 to 20 cent., comprising the tract of the Cordilleras, elevated between 3500 and 7000 French feet, and the plateaux from 5000 to 7500 French feet. 3rd. frigid, which admits of two divisions, moderately cold and extremely cold—the former from 7000 to 8500 feet above the sea-level, and the latter from 10,000 to 11,000, the highest land inhabited. These observations are accompanied by researches into the geographical distribution of plants and animals, in relation to mean temperature. M. Galeotti has corrected many of the positions in Humboldt's Atlas, especially near the Pic of Tancitaro, where villages and hamlets placed on the east of the volcano of Jorullo lie really to the west of it, as for instance the great village of Uruapan. M. Galeotti intends to publish detached papers on these subjects and a geological map.

M. Ghiesbrecht will be despatched immediately to Mexico, if he is not already on his way, to complete M. Galeotti's investigations; having already made a zoological excursion in that country.

From Colonel Lloyd we have an account of an Indian race inhabiting Panamá, and from Dr. Scouler a paper on various other tribes of the north coast of America, with Vocabularies of sixteen languages far more extensive than any previously published.

It is reported that a French company has been organised for the purpose of cutting a canal across the Isthmus of Panamá.

Of the papers received from the Hydrographical Office at the Admiralty, one of the most interesting from the number and precision of its details recounts an expedition by Mr. Lawrence up the river and lake of San Juan de Nicaragua. The travellers, after carefully observing the rate of the current, crossed from the lake to the Pacific. Proceeding from Nicaragua, through a thick wood, and then over an extensive savannah, they came to a range of mountains, from one of which, 800 feet high, they had a beautiful view of the Pacific, about 3 miles off; and soon after found themselves unexpectedly at a little cove called El Cacola. To the south of this spot, at the distance of a league, they arrived at last at the place they sought, the port of San Juan. The tide rises here about 12 feet. According to Mr. Baily's levels, from Puerto de San Juan to Rio de Lacas, near Granada, the level of the lake is 128 feet 3 inches above the Pacific.

British Guiana, comprising the basins of Berbice, Demerara, and Essequibo rivers, is separated from Dutch Guiana or Surinam, on the south-east, by the river Corentyn. On the north-west, a line of demarcation not yet perfectly agreed upon divides it from the Columbian territories, while the extensive boundary lines which separate British Guiana on the south-west and south from the Portuguese are, it appears, equally liable to dispute; the reputed boundary not coinciding with those natural land-marks, to which, in the absence of special agreement, reference must always be made in the adjustment of territorial divisions.

Mr. Schomburgk, having completed the publication of his *Historical, Geographical, and Statistical Description of British Guiana*, has returned to that country on a special mission, having for its object the adjustment of these questions; and her Majesty's government, kindly acceding to the request of the Council, has allowed him to investigate also the sources of the river Orinoco. He arrived at Demerara on the 24th of January.

Brazils.—Dr. Lund has been travelling for some years in the

Brazils at the expense of the Royal Society of Copenhagen, with a view to natural history, and has transmitted home several communications, which will be found in the Transactions of that body: among them is a treatise on the discoveries of the early inhabitants of the northern part of South America, and several papers on geology. Of the fossil animals, whose bones have been discovered in caves, one which is new to us as a fossil corresponds with a recent type found exclusively in that country. From this and similar phenomena observed by Sir Woodbine Parish one might almost be tempted to infer that while, since the period of diluvial action, the northern latitudes have been subject to extraordinary vicissitudes of climate, no corresponding change has taken place in the southern.

The earliest account of the river La Plata, drawn up by Sebastian Cabot, is one of the many rarities about to be laid before the public by M. Ternaux Compans.

AUSTRALIA.

Mr. Eyre, who left Adelaide on the 18th of June, in the hope of being able to plant the British standard on the Tropic of Capricorn, in long. 135° or 136° , has met with an unexpected obstacle to his progress in a crescent-shaped lake supposed to be Lake Torrens. The length of this piece of water exceeds 400 miles: its breadth is inconsiderable, but the shores, composed of soft mud and sand, cannot be approached. Our enterprising traveller directed his steps therefore to Streaky Bay, in the hope of finding on the west the means of resuming his original direction.

The House of Commons has printed a despatch from Sir George Gipps, governor of South Australia, with an appendix, containing, first, a report by the deputy surveyor-general on the Clarence river; secondly, a report of the state of the survey at Moreton Bay; thirdly, a report on the dividing range of New South Wales and the recently-discovered region denominated Gipps' Land, by Count Strelecki; and, finally, a report of Mr. Tyers's survey undertaken with a view to establish the somewhat uncertain position of the 141st meridian degree of E. longitude being the prescribed boundary between New South Wales and South Australia. The result confirmed the account of Sir Thomas Mitchell; but Mr. John Arrowsmith has appealed against the accuracy of Mr. Tyers's decision, so that the question cannot yet be said to be set at rest. By this despatch it appears that the counties into which the colony has been divided pursuant to the general instructions sent out under the sign-manual, serve no other purpose than

that of marking the boundaries of location, *i. e.*, the limits beyond which land cannot be sold. There is also a map showing what government surveys have been carried on in the neighbourhood of Port Philip. Maps illustrative of the several reports are appended, and the table of a trigonometrical survey between the river Glenelg and Batman's Hill, Melbourne.

Of Gipps' Land, its discoverer Count Strelecki has given a very animated description. It has an extent of 5600 square miles and upwards of 250 miles of sea-coast, and eight rivers; a navigable lake and lagoons bisecting 100 miles of its length: to form communications over the whole district requires only the construction of bridges, and the occasional clearing of bog and brush. The richness of the soil and pasturage can scarcely be surpassed; and the ranges of hill are easy of ascent. According to Count Strelecki's description this region presents a most inviting prospect to settlers, more especially cattle-breeders, the natives being inoffensive and gentle.

Several isolated hills, which rise from a barren plain of considerable extent, separating Port Philip from Mount Shadwell, are supposed by Mr. Tyers to be volcanic. We believe that these are the first traces of volcanoes which have been found in South Australia.

Much of the remaining matter contained in this document is original and interesting; but I shall not proceed any further in my notice of it, since, having been published, it is accessible to all who may wish to consult it.

The Sydney Herald announces the discovery of a very fine river issuing from a point between Clarence River and Moreton Bay. It is said to have 30 feet of water on the bar; and Mr. Scott, who explored it upwards of 30 miles, describes the banks as extremely beautiful and abounding in cedar-trees.

New Zealand.—Capt. Cecille, a French officer, already mentioned, who was employed in the southern hemisphere upon objects connected with commerce, has constructed a very accurate plan of the Chatham islands and the principal bays in New Zealand. He also reconnoitred the islands of Prince Edward, Crozet, St. Paul, and Bass.

The seat of government for New Zealand is to be the town of Auckland, situate in the estuary of the Thames. Mr. Sigor is Surveyor-General, having Capt. Symonds under his orders.

The New Zealand Company has added to its possessions the ownership of Chatham Islands, a group lying in latitude $44^{\circ} 5'$, and about 300 miles E. of Port Nicholson. The extent of this acquisition exceeds 700,000 square acres. It consists of three islands, *viz.*, Chatham Island, Pitt's Island, and an islet of smaller dimensions to

the S.E. There is a safe harbour and a sufficiency of water; the climate is good, and the soil fertile.

Van Diemen's Land.—It is much to be regretted that government has not recognised *Tasmania*, as the name of that island improperly denominated Van Diemen's Land. The occurrence of a second Van Diemen's Land on the northern coast of Australia occasions confusion; and since Tasman, not Van Diemen, was the first discoverer of the island, it would be but just that whatever honour the name confers should be given to the former navigator.

On the *Asiatic Archipelago* a great deal of interesting, and, I believe, original information is to be found in the work of M. Lafond de Lurcy before mentioned, more especially on Sumbáwah, Lombok, Flores, and the Philippine Islands.

He describes as inhabiting Borneo, Nikobar, Timor, &c., a race of black pigmies, whose height seldom exceeds $4\frac{1}{2}$ feet. They are mentioned by Legentil, in his *Voyage Round the World*, in 1767; Walkenaer notices them, but not as Lilliputians; and they would seem to have escaped the searching scrutiny of Prichard.

An outline of the proceedings of Mr. Brooke up to the 9th of June, 1841, has already been laid before the Society. In the early part of this year Mr. Treacher, who accompanied the expedition to Celebes, returned to England, with a small but valuable packet containing eighty plates of birds and twenty views in that island, executed by a Danish artist, who accompanied the Royalist, a chart of the bay of Boni, from surveys, the field-books verifying the chart, tidal and thermometric registers, and two Singapore newspapers, containing a brief account of Mr. Brooke's two cruises, drawn up by himself. Mr. Treacher was unfortunately shipwrecked, and lost the large and valuable collection of skins of birds and quadrupeds amassed in Celebes. The latest account of Mr. Brooke is dated Singapore, Feb. 20, 1841: he had just finished a six months' cruise on the W. coast of Borneo in the vicinity of Saráwah, and meant to return to that country immediately, having established a firm and friendly connexion with the inhabitants.

Mr. Brooke has communicated to the Society his remarks on Celebes, in which are detailed some of its physical features. The accounts given of the dangers of the channel between this and North Island are, he says, unfounded, the passage being deep and clear, and constantly used by the natives in preference to Salayer Strait. M. Lafond de Lurcy has thrown out a suspicion that the rocks laid down in the charts of the Bay of Boni are fictions introduced by the Dutch for the purpose of keeping the trade to themselves; Mr. Brooke states that the centre

of the bay is choked by coral reefs, which leave a passage, seldom exceeding a mile in breadth, along the shore; but that the northern portion of the bay, though affording no anchorage, is easily navigable.

Tenasserim, Siam, Barma.—Dr. Richardson quitted Maulmaïn on the 18th of December, and proceeded by Nyaung-benseit, Kyaik-mare, and the teak-forests of Attran and Kyaing to Nat-Kyaung, where he disembarked and continued his progress by land. He describes the Attran and the Zimmi as very uninteresting; the course of the latter river is extremely tortuous, flowing through an alluvial country, with high woody banks.

On the 18th he arrived at the Minnamoï, which flows into the Dayaik and rises in the hills E. of Ye. From Kamburi, where the Sisawot joins the Minnamoï, he crossed the river to Tatakau village, recrossed it at the Siamese village New Mongstein, the old being in ruins, and proceeded to Nakut-chatti, where, on the 5th of February, he embarked for Bankók. The shores are low: the river divides at the little village of Mongstein into two branches, one of which flows westward to the sea; on the other, which flows to the N.E., are some Chinese sugar-works. Following this branch Dr. Richardson reached the town and fort of Bankók, where there is an English factory.

Having thus rapidly sketched the latest geographical labours as regards books and travels, I shall now briefly enumerate some of the more important maps and surveys which have been executed or are now in progress.

EUROPE.

Count Schweinitz has lately determined a very considerable number of heights in Bavaria: an account of these will be found in *Berghaus' Annals*, No. 181. The cadastral map of Bavaria is probably the most perfect ever attempted; of its colossal size some idea may be formed when I state that there are eight circles in that kingdom, and that the delineation of one of these will require, as we are informed by Dr. Martius, 12,000 sheets: to every sheet is annexed a pamphlet containing an index of places, a practice which ought to be universal.

In the duchy of Baden three base lines have been measured at different times; one from Schwetzingen, another near Salem on the lake of Constance, and the third from Ettenheim, but none of these were deemed sufficiently exact for the survey now going on. The new bases of triangulation begun in 1819 were completed in 1827. The scale

is as $\frac{1}{350,000}$ to reality. The altitudes have been determined by measuring the vertical angle with an 8-inch repeating circle: the levels, ascertained with great precision, are measured from the floor of Strasburg cathedral, 485·84 Baden feet above the level of the Mediterranean—a useful hint to geographers: it is much to be desired that the height of the floor of all the cathedrals of Europe above the sea-level were laid down with equal exactness.

The trigonometrical survey of the kingdom of Hanover by Capt. Papin occupies sixty-five sheets: the scale is 3 inches to the geographical mile.

A very excellent map of the Electorate of Hesse has been executed by Reusse, in twelve sheets; but it is only a road map, and does not represent the configuration of the surface: its scale $\frac{1}{90,000}$ to reality.

A new government survey of the Duchy of Nassau has been proposed, and the necessary funds voted for its execution. A similar survey of the Duchy of Saxe Coburg Gotha is accomplished.

Colonel Oberreit has presented to the Society two copies of his splendid map of Saxony.

The determination of the relative levels between Berlin and the German Sea, upon which Major Baeyer and Mr. Bertrand have been employed during several years, is completed, the difference in their results not exceeding $\frac{1}{16}$ of a French foot.

A new survey has been made of the north coast of Prussia, with special attention to the lighthouses.

Herr von Oelsfeld, at Berlin, has established, under the title of *Der Karten-Freund* (the Map-Fancier), a review of all new maps.

Switzerland.—The geography of this country has received great and important additions. A geometrical description of it has been published; that is, the results of the trigonometrical measurements, which have been executed with such care, that the length of a side common to one of the Swiss triangles and to one of the French corresponds in the two surveys to within one-twentieth part of a metre in a length of 35,997 metres, while on the Italian frontier the common sides of the Swiss and Austrian triangulations correspond also within a small fraction. Colonel Echmann's account contains an exposition of the operations, the catalogue of the triangles, and their measures, the heights of twenty of the principal lakes of Switzerland, &c.

The most important part of the labour of a grand trigonometrical map of Switzerland is therefore happily accomplished.

Neufchatel.—Every admirer of maps is acquainted with the beautiful map published some time since by Osterwald: the value of this

production is greatly enhanced by its conversion to geological purposes by M. A. de Montmollin ; the map so appropriated will be found in the 2nd volume of the Society of Natural Sciences of Neufchatel.

Captain de Michaelis, a distinguished member of the Geographical Society of Frankfort, has engaged to survey the Canton of Arau.

A small but very useful map of the Canton of Thurgau has been brought out by Captain Sutzberger—its scale is as $\frac{1}{156,1500}$ to reality.

Canton of Geneva.—The scale of the recent survey of this canton is $\frac{1}{12,500}$; the engineers employed were Messrs. d'Osterwald, Wolfsberger, and Bétaut, under the direction of the Quartermaster-General, Col. Dufour. The position of ninety-five points has been determined by a great number of triangles, and their perfect agreement with the French triangulation leaves no doubt as to their accuracy. The roads and watercourses have been separately levelled. The details have been executed by the levelling compass, and the slopes are expressed by horizontal curves of equal altitude, being 4 metres above one another ; this gives a most accurate knowledge of the undulations of the ground, and renders the map particularly useful for all great projects requiring levels. The engraved map indicates the heights above the sea of *seven hundred* different points, and also the several soundings of the lake of Geneva.

By means of the curves mentioned, the following results are obtained. If the lake, the mean height of which is 375 metres above the sea, were to rise 20 metres, it would overflow 8200 pous, or nearly a tenth part of the whole canton. Charny, the only village lower than the lake, Carouge, Versoix, and the city of Geneva, except in its most upland parts, would be under water. A further rise of 20 metres would but cover 6300 pous more : hence it appears that the most rapid slopes are those between 395 and 415 metres above the sea. Lastly, a rise of 435 metres would overflow 25,000 pous, with the most considerable villages. One-half, however, of the canton is situated above 60 metres higher than the surface of the lake : these lands form plateaux.

The engraving, on half the scale of the drawing, has been executed by Bressanini, an able artist, employed formerly in the Military, Geographical, and Statistical Dépôt of Milan.

It was mentioned on a former occasion that Colonel de la Marmora had presented to the Society an enlarged and corrected edition of his beautiful map of Sardinia. An analysis of that work is given in the 'Nouvelles Annales,' and the Geodesic operations are described in Berghaus' journal.

A survey of Portugal is in progress : several positions have been astronomically and trigonometrically determined.

A cadastral atlas has been composed from the local maps of the re-

spective communes in Belgium, upon the scale of $\frac{1}{50000}$; the director of the cadastre has constructed a topographical map of East Flanders, in twenty-five sheets, and M. Desterbecq a map of the Netherlands, on the same basis.

The Corps des Ponts et Chaussées have been engaged for several months in laying down a series of levels through the Belgic territory.

Of the maps which have issued from the splendid establishment of M. Van der Maelen the following are among the most recent.

1. A single sheet map, showing the boundaries of Belgium, as determined by the twenty-four articles.
2. A statistical map of the same country, by X. Heuseling.
3. An ecclesiastical map, by P. T. Gennant, in six sheets, beautifully coloured.
4. A general map of Belgium and Holland.
5. The environs of Brussels, in nine sheets: scale $\frac{1}{100000}$.
6. Map of the sluices around Brussels.
7. Ditto, showing the routes of the coal barges.
8. Picturesque atlas of railways, by Alphonzo Wauters, containing 16 maps and 400 views.
9. New atlas of the kingdom of the Netherlands.
10. Kingdom of the Netherlands.
11. Map of Central Europe, showing the railways completed or proposed.
12. A series of maps for the use of infant-schools.

The Royal Society of Copenhagen is preparing a map of Denmark; and Professor Schumacher, of the Duchy of Holstein; a special map of Fyen Island (Fiorica) has been constructed by Captain Maus.

The government survey of Western Russia by General Schubert, in sixty sheets, on the scale of $\frac{1}{420000}$, extends westward as far as Kazan; and several reports have issued from the same office, detailing the progress of military topography.

In 1830 an annual grant of 10,000 rubles was made to Messrs. Struve, Maupertuis, and Schwenenberg, engaged to measure a degree of the meridian in Finland: the grant to be continued for ten years.

On the 30th November, 1833, the old divisions of Spain were superseded; and in the following year a treatise was published by Don José Mariano Balleio, explanatory of the principles on which the new divisions were established. The Spanish main now comprises forty-seven provinces, and the Balearic and Canary Islands two more: but it would be in vain to seek for these in the most accredited of our English maps.

The kingdom of Greece has experienced equal neglect: by a decree, dated April 15, 1833, that kingdom was divided into eight nomarchs,

or nomi, extended afterwards to ten. These nomi were subdivided into 54 eparchs, and 468 communes. By a later decree (dated 1836) the country is now partitioned into thirty governments, the names and boundaries of which, I am sorry to observe, have not yet found a place on any map with which I am acquainted.

Turkey in Europe.—A fine map, beautifully executed, of European and the contiguous part of Asiatic Turkey, in twenty-one sheets, by Lieutenant von Weiss, was published in 1820; but, as far as I recollect, has not been yet introduced to your notice. Scale about 9 English miles to the inch.

ASIA.

An able map of the Troad, executed by Lieutenant Brock, and several masterly sketches by Lieutenant Greaves and the officers under his command in the Grecian Archipelago, which have been kindly exhibited at one of our general meetings, are, I am satisfied, still fresh in your recollection.

Hindustan.—Since our last Anniversary, sheets 62, 94, and 108 of the Indian Atlas have been published; and the surveys sent home will complete 75 and 77, and very nearly sheets 56, 74, and 107.

Colonel Everest is engaged in remeasuring part of the earlier sections of the meridional arc, his instruments being much superior to those used by Colonel Lambton.

The triangulation of Northern India is proceeding steadily; two of the meridional series are already completed.

Numerous surveyed routes through the countries recently traversed by the British armies, on the borders of India, Persia, and the Oxus, have been compiled into a general map of the N.W. frontier of India, published by order of the Court of Directors.

The nautical directions for the Red Sea have also been published, together with a chart of Kooria Moorla Bay.

Plans of all the principal harbours and anchorages in the Red Sea and the harbour of Mergui are preparing for publication.

The survey of the sea-face of the Sunderbans by Captain Lloyd has been completed.

A vessel has been appointed to survey the coast of Orissa from Point Palmeiras to the Húgli, and another for ascertaining the dangers off the islands of Cheduba.

In the 'Nouvelles Annales des Voyages' we find a journal of the embassy to Bútán in 1837-8, edited by Mr. Griffith, who accompanied it in the character of an attaché, and the Chevalier Olloba d'Ochoa has increased the interest of this paper by his notes and by a map of Bútán,

showing the route of Captain S. Turner in 1783, and of Captain Pemberton in 1837-8. On his return to Calcutta Captain Pemberton constructed a map of the eastern frontier of the British dominions in India, which has been lithographed by order of the government. This map, though coarsely executed, appears to be formed of the very best materials that could be collected, and is a valuable contribution to geography. Among its peculiar features may be mentioned an annular lake, called Lake Yorbrog Yumtso,* supplied internally by three brooks, two of which run to the S. and one to the N., and externally by two other brooks running from W. to E.; its only issue being the Wanjang, which runs to the S.

AFRICA.

The map of Mr. M'Queen has been already noticed.

AMERICA.

United States.—By the Report of the Secretary of War to the American Congress, towards the close of last year, we learn that the survey spoken of in an earlier report is completed, and that a map has been constructed which embraces that portion of territory which lies *between the Mississippi and Missouri rivers* from their confluence to the (assumed) northern boundary of the States, and limited by the parallels of lat. 39° and 49° N., and the meridians 90° and 100° W. of Greenwich. The map is based upon 245 astronomical observations, on actual surveys, and on the best information which the exploring party could procure of such small portions of the Indian territory as they were prevented from examining by the inevitable dangers attending the attempt, from want of means and time.

A very extensive *series of barometrical observations* had been made, and the zealous co-operation of men of science occupying stations in the United States had enabled Mr. Nicoles to compare his own results with those of others in different quarters of the Union, and thus accurately to determine the *relative level of the whole region* represented by the map, as well as its *elevation above the ocean*, thereby indicating the climate and face of the country.

The map will be accompanied by a report calculated to give an accurate idea of that distant country.

This announcement is the more gratifying as it appears probable that measures will be taken to extend the survey by degrees to the sources of the Missouri and across the Rocky Mountains to the Pacific; and it is understood that in future all surveys will be accompanied by astronomical and barometrical observations.

* Or Palté.

The admirable map which Colonel Codazzy has constructed of Venezuela is in the hands of Parisian engravers.

At the instance of Mr. Ellauri, Uruguay minister at Paris, a lithographic map of the state of Uruguay, constructed by M. A. Roget, who is consul there, will speedily be published at the expense of the French government.

AUSTRALIA.—The trigonometrical survey at Moreton Bay, under Mr. Robert Dixon, proceeds with all possible celerity. A network of triangles has been already carried over a surface of 1200 square miles. A very considerable portion of the country between that settlement and Richmond river consists of extensive plains; and Mr. Normanby, the surveyor, under harassing difficulties, has measured upon one of these a base-line of three miles as a foundation for the principal part of his trigonometrical operations. His assistant, Mr. Stapleton, while writing in front of his tent, was surprised by the natives, plundered, and murdered. I have already noticed other surveys that are going on in the same part of the world.

The method of showing hills and valleys in relief by stamped paper, first employed by M. Ravenstein and M. Bauerkeller at Paris, has been greatly improved by M. Kremmer, of Berlin. This artist has completed, or nearly completed, two works well deserving your attention; the one a terrestrial globe 4 feet in diameter, the other a representation in relief of the valley of the Rhine between Frankfort and Bonn, together with the country adjacent, so that it comprehends the entire duchy of Nassau; it is 12 feet in length by $10\frac{1}{2}$ feet in breadth, and the scale $\frac{1}{36,000}$ of reality.

M. d'Avezac has published a reply to Mr. Holmes's objection noticed in my address last year in regard to the Cartes Catalanes: that they existed in the library of Charles V. of France every one admits; but the question is what became of them afterwards? "They have been traced," says M. d'Avezac, "through the libraries of Blois and Fontainebleau to that of Paris; and this continuous chain of evidence clearly proves that the date of 1375 is the genuine date of this document."

Having now completed the historical portion of my address, I wish, after the example of last year, to submit to you a few observations of a more philosophical cast. Allow me then to remind you that in Geography, as in every other pursuit, the only sure way to attain our object

is to conceive distinctly, in the first instance, what that object is. Exertion insures only fatigue; to insure success exertion must be well directed: science can be cultivated to profit only when cultivated upon principle: without an enunciation there is no problem; without a definition no steady meaning; without a solid basis no firm superstructure.

The only sound basis for geography in general is physical geography. Civil, political, and all other kinds of geography are merely grafts upon this original stock. Our first aim should be to construct, I will not say a perfect map of the surface of the earth, but rather a perfect model; I know that this cannot be constructed at once, nor perhaps in the course of centuries; but we should always look to it as the goal of our labours, moving, however slowly, in the right direction.

The Ordnance Map of England being found insufficient for the present and ever-growing wants of the country, a proposition has been brought forward to increase its scale from 1 to 6 inches to the mile, the scale adopted in that of Ireland. Rejoicing as I do in this event, I cannot forbear saying that, before any final decision is come to, Government should consider well whether a 6-inch scale will be adequate to all the objects for which such a map is required or likely to be required, remembering always that by reducing a large map you may diminish its imperfections till they become perfectly insignificant, while by enlarging a small one you may magnify them till they become monstrous; this, however, is a question of economy rather than of science.

That the *proposed* Map should clearly represent the surface-form of the country, follows necessarily from what has been said; but it should comprise more: it should be constructed not for one purpose only, but for all imaginable purposes; the names and signs and boundaries inserted in it cannot be too numerous, supposing of course that the positions of these are correct; the only mischief to be apprehended is lest they should be too few: the desideratum being not selection, but accumulation. The value of a colossal map of this miscellaneous character, too bulky to be often consulted, too costly to be purchased by many, would consist mainly in the facility which it would afford to artists to extract from the immense quantity of matter contained in it, such information only as belonged to any one head of inquiry, and transfer that information to maps of a convenient size, so as to illustrate every subject at last, but one only at a time. From this, which I call, for the sake of brevity, a Parent Map, might be raised a large progeny applicable to the demands of all public boards and private individuals: financial maps, municipal maps, military maps, orographic, hydrographic, geological, metallurgic, zoological, botanical, agricultural maps, county maps, parish maps, road maps, historical maps might all be composed with great facility at very

little comparative cost, and far more excellent than any which at present exist, from this one great national map of reference, which need not, perhaps, be engraved for publication.

A Map of the nature here suggested should, in respect to accuracy and completeness, possess in a great degree the characteristic merits of a photogenic drawing, in which there is no discrimination, no error, no omission: it should be, in the first instance, as far as possible an accurate portrait of the present; which, by lapse of time, must soon become the past: the Original would then resolve itself into an historical document; but a copy produced by the electrotype, allowing the omission of all that had passed away, and the insertion of all that had sprung up in the interval, might now become, what its predecessor had been, the mirror, as it were, of all existing objects.

Having incidentally mentioned the art of photogenic drawing, I cannot omit to notice one obvious advantage which belongs to it, an advantage which, in deference to short-sighted considerations, has, till lately, been but too often disregarded in the conduct of national surveys. The delineation of a photogenic drawing is immediate; that of a *survey* slowly progressive. I could name a survey which has already outlived its jubilee—if that circumstance did not entitle it to plenary indulgence. The face of a country undergoes strange alterations within a period of fifty years.

I return to the subject of mapping *generally*; of that beautiful contrivance which I know not whether to class with the fine arts or with the exact sciences, so intimately is it connected with both.

Mapping among its other merits may be designated the perfection of short-hand: many folio volumes of letter-press would not contain all the precise and various intelligence, the mutual relations and affinities, the contrasts and approximations, which are simultaneously brought into view in a single-sheet map of any kingdom.

Mapping considered in the light of short-hand has another advantage: ordinary stenography is for the most part a secret art, with difficulty legible even to him who employs it: geographical stenography is not only intelligible, but immediately understood by entire Christendom.

We have in this species of composition, as in music, algebra, chemistry, the elements at least of what with some little laxity of expression may be called an universal language. May not this language be further improved?

How much confusion would be avoided were the standard of horizontal dimension an universal standard! and, amongst geographers at least, there seems no good reason why it should not be such. Who has

not been embarrassed by the laborious, if not fruitless, attempt to compare maps of different countries, or of the same country, constructed by persons of different nations? how often have we not been foiled in our attempts to reconcile the English league to the Spanish, the Spanish to the French, the French to the German, the German to the Italian! how indifferent is the comparison, even when assisted by tables of numbers expressing the relation of their respective lengths!

The geographic or nautical mile and its subdivisions, when not used exclusively, ought to be an invariable accompaniment of *local scales*, or of the numbers which indicate the proportion between the dimensions of any given map and those of reality: it was constantly employed by the early geographers; and those who feel no great respect for antiquity may yet perhaps allow that the circumstance of its dimensions being *universally known* demands the continuance of its use. On this ground, its universal intelligibility, M. Jomard proposes a new application of the geographical mile, expressing by it and its subdivisions the amount of heights when accompanied by a positive sign, and of depths when accompanied by a negative.

Longitude.—Variety of the starting point for longitude is another source of confusion to the scientific geographer as well as the practical navigator: Nature has pointed out a common “start” for the divisions of latitude, but not of longitude: frequently we find the meridians traced on a map, and not a single note to say to what point on the earth they refer: how fruitful a source is this of inconvenience to the landsman, and absolute danger to the mariner! Some common “departure,” from which to reckon longitude, ought to be forthwith established; and if the national pride and vanity of men so far prevail as to prevent geographers from abandoning the old system, founded upon patriotic considerations, let them at least, for the sake of general intelligibility and common interest, give two columns of longitude, one referring to the universal, the other to their national zero. It matters little where this universal zero is fixed, whether upon the ocean or dry land: the one thing needful is this:—that some one accessible point on shore should be chosen, if not for zero, at least as being at some definite distance from zero: from this point all the now existing zeros of longitude would be at computable distances, capable of being referred to the universal zero, in relation to which longitude might in future be everywhere determined.

There is yet another discrepancy in respect to the measurement of longitude, which I could wish to avoid. Why should the earth be considered in some of our reckonings a sphere, in others two hemispheres? Why in a measurement of this kind should we have two departures, an

eastern and a western? Why should not terrestrial longitude, like celestial, be measured all round the globe? Is it not more simple and natural to say 185° longitude than 175° West longitude?

We choose the observatory of Greenwich as the first meridian, the French that of Paris—Paris being $2^{\circ} 20' 24''$ E. of Greenwich. The great meridian, by the most ancient *Greek geographers*, passed through the Fortunate Islands, now the Canaries—thence it was translated by the Arabians to the uttermost part of the western shore. The best of them brought it back again to the Canaries, and placed it on the Peak of Teneriffe, the supposed Junonia of Ptolemy.

Ptolemy, as Marinus the Syrian cited by him, and the ancients before them, fixed the great meridian in Hera, or Junonia (Canaries). Of these islands six only were known to Ptolemy and Pliny, the seventh not being then discovered. Our own countrymen removed it from the Canaries to the Azores, under the idea of this being the magnetic meridian, which it is not; and if it were, the reason would be bad and the alteration objectionable.

Stevinus, a Dutch geographer, brought it back to the Canaries, observing that one of these islands should be fixed upon—a change which he terms *exiguus quidem sed notabilis et perpetuus*.

Johnson, in his lesser globe of 1602, makes the great meridian pass through Cervo and Flores—but in that of 1616 through the Peak of Teneriffe.

The difference of longitude from the Pico to the Arabic meridian is 10° more E. according to Abulfeda—from Pico to the Island of St. Michael's 9° —from Pico to Cervo 15° , and both so much more W.

Temperature.—Records of temperature, if not from observation with the centigrade, ought always to be reduced to that scale; that the distance between almost the only natural constants of temperature should be divided decimally seems so natural that it is wonderful how any other systems should have been ever proposed, and certainly not desirable that any other should be supported.

Atmosphere.—Should the plan of M. Jomard, for recording heights and depths, be adopted, barometers might be so divided that, after the usual corrections, the quotient would remain in terms of the geographic mile; as it is, we are driven to the use of a barometer, divided to the inch of the country in which it was made, and have no other resource than to reduce the result into *our* own standard of length, and as many more standards as we have patience and industry to work out.

Symbols.—Various as possible form (and therefore infinite in variety), symbols, whether used individually or collectively, may be applied to denote any conceivable quality or quantity of matter. Why then not have

a more perfect system of symbolical notation in geography? Why should chemistry, botany, music, heraldry, possess exclusively the advantage of a system which can be made to express with equal facility properties or quantities, variable or invariable, simple or mixed, in every other science?

Nomenclature. Orthography.—Much might be said (and were I to follow the natural course of my subject much should be said) on the subject of nomenclature, slightly touched upon in my address last year: but time flies, and your patience must ere now be on the wane; we will therefore pass it over: the no less important subject of the orthography and pronunciation of Oriental, Occidental, Australian, and Polynesian names, must be passed over for the same reason.

I never look at a map of location, I never read the description of a settlement, without feeling regret that rectangular parallelogramatic boundaries to farms, districts, and counties, should have been preferred to the comparatively permanent divisions and subdivisions traced by the hand of nature: they impress me rather with an idea of mutilation than of anatomy.

Having now enumerated the principal subjects upon which I am anxious that geographers should come to an immediate and final understanding, I proceed to notice the arts directly relating to our science, too many of which, I regret to say, are still held in geographical abeyance.

Engraving on Metal.—Engraving on metal, the possibility of hardening it, and the power, by means of the electrotype, of multiplying plates in all stages of their progress, of every degree of refinement and in every metal which is soluble, bid fair to render to geography, as well as to many other sciences, the most important service.

Lithography, Zincography, Stenciling.—Lithography, its sister-art Zincography, and the several subordinate arts of tracing and transfer, retransfer, and transposition by transfer (already powerful aids to the engineer, the architect, and the surveyor), are of great importance as regards the construction of maps, particularly when despatch is of consequence, and not perfect accuracy. Stenciling also may be, occasionally, useful, especially for the introduction of additional matter.

Colour.—However great is the importance of *colour* in the production of “useful effect,” its power has been yet but imperfectly appreciated or developed in connexion with map engraving: the system of register printing affords ample scope for its more general application.

Engraving on Wood, rendered more effective by the use of moveable blocks, ought to be more frequently employed.

Gypsography, too, promises to become a useful auxiliary.

Moulding or Modelling, Embossing by expression or transformation, Casting in the metals, in plaster, or in pulp, with many other operations of the same character, ought to be made more subservient to the purposes of geographical science.

Transparencies.—The effects of transmitted and reflected light, sympathetic and contrasted colours, sheets to remove and replace, printing in gum, colouring by powders, and a variety of other expedients (long since applied to the purposes of art generally), will, I trust, be no longer neglected by geographers.

Photography.—I mention last, because I trust it is the least perfect, the art of photography. If one art more than another conveys to the mind a perception of the ideal, of the τὸ καλόν, surely it is photography. Derived from a process of reflection, it gives permanence to images in either an increased or diminished ratio; distance, foreshortening, and perspective are to it as easy as the plainest operation of the draughtsman's pen; it acts, as it were, on the impulse of the moment, and with unerring certainty; rivalling, or rather excelling electrography itself in minuteness and exactitude. It is worthy of observation that these beautiful discoveries, so nearly contemporaneous, so similar, if not in their operation, at least in their effects, result from kindred causes: the agent in one case being a metallic solution, in the other an affection of the reflective properties of the surface of a metallic solution.

Gentlemen, I will detain you no longer. I thank you for the patience with which you have heard an address tedious necessarily, from the multiplicity of its details, and I am afraid unnecessarily also, from my want of skill in their adjustment. I am still *more* thankful to you for the confidence which placed me in this chair, and for the support and assistance which have been unsparingly afforded to me during its occupation. I rejoice in the prospect now opened to you of greater efficiency in the person of my successor; and shall carry with me into retirement the desire which I have ever entertained, to advance, as well as to witness, your well-earned prosperity.
